



STANFORD UNIVERSITY MEDICAL CENTER

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STANFORD UNIVERSITY SCHOOL OF MEDICINE
Department of Genetics

February 12, 1971

Mr. Robert Murray
President
Center for Interaction
901 First City National Bank Bldg.,
Houston, Texas 77002

Dear Mr. Murray:

At Dr. David Mulford's suggestion, I am happy to send you this informal proposal for support of a segment of the research in this department which is most immediately pertinent to problems of cancer.

You may be aware that I was a member of Senator Yarborough's Senate Panel for the Conquest of Cancer whose report has won an extraordinary level of bipartisan support in the Congress, and which was implemented to a substantial degree, with astonishing rapidity, in President Nixon's executive budget for fiscal 1972. You may not know that my first scientific publication, 25 years ago, concerned a genetic model for cancer that has guided much of my experimental work since then. Though somewhat naively stated, the model has also proven to be substantially correct.

I am perhaps bound to say this because my research has been at sufficiently basic levels of cell and molecular genetics that its relationship to cancer may not be immediately self-evident.

Our studies here are, in fact, concerned with the understanding of DNA in simple laboratory experimental systems, primarily bacteria and viruses. As described in our proposal, we are examining the effects of various widely distributed environmental agents on the DNA in bacterial cells, in the belief that this may be the most efficient way to probe their possible importance as causes of human cancer. Besides working on general methods to sustain these studies, we have focussed attention on chlorine as a specific example. We are by no means clear as to whether it is, or is not, a significant genetic and cancer hazard to man. However, in view of its very wide use it seems important to probe it very carefully, especially in view of our findings that suggest its main use (disinfection or killing of bacteria in water supplies) depends precisely on its capacity to alter, and sometimes destroy the DNA of the bacterial cell. It is quite possible, perhaps even likely, that natural body defenses -- like organic materials in secretions and in the blood-- protect target cells from serious damage by environmental chlorine in appropriate concentrations. However, our confidence on this score remains quite blind until we do explicit studies, which must

use the new tools we are developing.

Another branch of our work uses a totally different type of laboratory procedure, namely analytical organic chemistry, and is also much involved with the development of automated instrumentation fully controlled by computers. It would take some time for me to give you a historical account to tie together these interests with my work in genetics! Briefly, I will just say I have been working in this field for about 10 years now, much of it in connection with the development of experiments for use in NASA's planetary flight programs to Mars, which are materializing in an orbiter in 1971 and a lander in 1975. My concern there has been for the careful scrutiny of that planet for other life systems, and to stress the search for DNA as the most characteristic molecule in terrestrial life.

Throughout this period, NASA has strongly supported our approach of looking for every opportunity of finding applications in human health of space-related technological innovations. Alas! The budgetary retrenchment that NASA has now had to absorb has required the agency to narrow its support to more immediately space-mission-oriented work. Hence to maintain the environmental-cancer-related studies just mentioned, we must look to other sources to the extent of \$50,000 per year in direct costs. This is precisely the budget summarized in the attachment.

I have prepared the rather abbreviated justification that accompanies this letter in some haste, and in part to avoid being held over beyond the holiday weekend. I will be very happy to expand upon it in any respect that you indicate. In any event, a formal instrument will have to be prepared and endorsed by the University business office to be the substance of an actual grant. However, I can foresee no difficulties on that score, and it is quite customary to carry preliminary discussions to an advanced point of mutual understanding before such formal commitments are concluded.

Yours sincerely,

Joshua Lederberg
Professor of Genetics
& Chairman of the department.